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THE SECTION CLEMENSIA OF CHISOCHETON (MELIACEAE)

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SUMMARY

Clemensia Merr. is considered a section of *Chisocheton* Bl. Two species are distinguished and described. *Chisocheton medusae* f. *hiascens* Jacobs is published as a new form.

An examination of some hitherto unidentified material allowed me to get an idea of the variation and limits of the two known species referred to *Chisocheton* sect. *Clemensia*.

Following Airy Shaw's arguments that qualitative characters distinguishing *Clemensia* Merr. as a genus from *Chisocheton* Bl. are wanting, *Clemensia* is treated here as a section of *Chisocheton*.

Chisocheton sect. *Clemensia* (Merrill) Airy Shaw

Clemensia Merrill in Philipp. J. Sci. 3: 144. 1908; Harms in Engler & Prantl, Nat. PflFam., 2. Aufl., 19 b 1: 155. 1940. — *Chisocheton* sect. *Clemensia* (Merr.) Airy Shaw in Hook., Ic. Pl. 4 (2): t. 3333. 1937.

Trees. Leaves up to 140 cm long, glabrous above, rhachis often with terminal bud. Inflorescence axillary or supra-axillary, pendulous, axis sturdy. Flowers polymeric, the largest of the genus. Calyx large, widely cup-shaped, truncate or lobed, about 14—20 cm long and wide, subcoriaceous, short-haired outside, glabrous inside. Petals 7—14, connate below, lorate-subspathulate, coriaceous, in bud longer and shorter ones alternating, when full-grown recurved, outside densely covered with appressed, yellowish, velvety hairs, inside glabrous. Anthers 15—30, sessile, latrorse. Ovary 5—8-locular, each cell 1-ovulate.

TYPE SPECIES.—*Chisocheton macranthus* (Merrill) Airy Shaw.

DISTRIBUTION.—Two species in the Philippines and Borneo.

The morphological interpretation of the ultimate branches of the inflorescence and of their articulations varies with the authors of the descriptions; a well established terminology seems necessary. The mode of branching of the lateral axes of the inflorescence is evidently cymose, and a comparison with the genus *Vavaea* Benth., in which the floral articulations bear two small cataphylls, makes me believe that the situation is this: the axil of each bract bears the axis of a potential dichasium

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reduced to a single flower. According to Moll in his "Phytography as a fine art" (p. 176, 1934) we should call a pedicel "the whole floral cormus below the perianth, on condition that this part is unbranched and bears at most only a few sterile cataphylls." It does not seem essential to me that the bracteoles are aborted here. Therefore I divide the "pedicel" into two parts: the one below the articulation and the one above it that passes into the calyx and falls off together with it.

Some characters in the species of this section are distinctly variable. In *C. macranthus* the leaf base is narrowed into the petiole to rounded; a similar variation will possibly occur in *C. medusae*. The calyx may be truncate or incised into 2—4 coarse teeth. The petals vary in number, stick together in bud and remain parallel for a long time; they can attain a length of 30—35 mm before their discharge, and recurve at last while still growing, reaching sometimes up to 45—50 mm in length. Simultaneously the staminal tube extends, as does the style. Therefore, measurements taken from not fully developed flowers (very rarely collected) are not quite reliable. I found densely and sparsely strigose ovaries as well as glabrous ones. The style, in the hermaphrodite flower always strigose in the lower half, may be glabrous or hairy in the upper part.

KEY TO THE SPECIES OF CHISOCHETON SECT. CLEMENSIA

1. Staminal tube quite glabrous, its apex entire. Ovary 7—8-locular. Petals 10—14. Leaves hairy below, midrib also hairy above 1. *C. medusae*
1. Staminal tube hairy inside, apical teeth hairy outside. Ovary 5-locular. Petals 7—10. Leaf-meshes mostly glabrous below. 2. *C. macranthus*

1. CHISOCHETON MEDUSAE Airy Shaw

Chisocheton medusae Airy Shaw in Hook., Ic. Pl. 4 (2): t. 3333. 1937; Harms in Engler & Prantl, Nat. PflFam., 2. Aufl., 19 b 1: 155. 1940.

Tree, 7—12 m. Young twigs fulvous-tomentose. Leaves up to 120 cm long; petiole terete but flat above, decurrent the branch and forming an axillary cavity with it; rhachis somewhat angular, as the petiole fulvous-tomentose, somewhat glabrescent. Leaflets more or less opposite; petiolules round, 2—3 mm long, densely hairy; blade lanceolate, rarely elliptic, 30—40 by 7—9 cm, submembranous, upper side sparsely pubescent when young, later glabrous, lower side rather densely fulvous-pubescent; apex acute to acuminate with 2 cm long tip; base narrowed into the petiolule and blunt; margin entire, slightly recurved and fulvous-ciliate; midrib stout, slightly prominent to somewhat impressed and densely fulvous-tomentose on the upper side, prominent and densely fulvous-pubescent beneath; lateral nerves 20—24 on either side, straight, near the margin curved towards the top, not prominent above and somewhat hairy

to glabrous, prominent below and hairy as the midrib. Inflorescence 20—25 cm or longer, few-branched and sometimes narrowly paniculiform at the base; axis compressed to angular, shortly fulvous-tomentose when young, glabrescent when older; lateral axes somewhat more densely hairy, sparsely flowered; bracts not seen, soon caducous, leaving distinct scars; lower part of pedicel 3—20 mm, somewhat angular, densely light brown-hirtellous, upper part 1—7 mm, as the lower part somewhat swollen at the articulation, pubescence as in the calyx. Calyx short-cupular to cupular, (10—)13—20(—23) mm long, 15—20 mm wide, as the pedicel densely ferruginous to grey-brown velvety-haired; apex truncate or split up to half-way into 2—3 triangular lobes; base rounded. Petals 10—14, 35—40 by 2—6 mm. Staminal tube 27—32 mm long when full grown, about 5 mm diam., quite glabrous; upper part somewhat broadened and incrassate, slightly enrolled or not, entire; lower part thin; anthers 15—20, just exceeding the staminal tube or not, as the dorsal connective dorsally flat, ventrally convex, laterally compressed, 3—4 by 1 mm, glabrous. ♀ Flowers: ovary located in the style-base and somewhat sunken into the flat to dish-shaped, roundish, brown, 3—5 mm broad, glabrous disk, 7—8-locular, 1—2 mm in diam., glabrous to densely yellowish hirsute. Style about as long as the staminal tube, in the lower part or wholly relatively long-hairy. Stigma globose, truncate, 2 mm in diam., glabrous. ♂ Flowers and fruits unknown.

Forma *MEDUSAE*. *Calyx truncatus*. Calyx truncate.

BORNEO. Sarawak: near Long Kapa, Mt. Dulit (Ulu Tinjar), IVth Division, 300 m alt., Nov. 19, 1932, secondary forest, tree, about 7 m high, corolla white, *Richards 2631* (K, type). — North Borneo: Kabili, Sepilok Forest Reserve, Sandakan, low lands, Apr. 3, 1935, tree 12 m high, flowers white (lateral axes of the inflorescence and upper part of the pedicels very long), *Castro B.N.B.For.Dept.4561* (L).

Forma *hiaseens* Jacobs, *forma nova*,¹ *differt a f. medusae calice juvenile florem omnino complectente, serius 2—3-fido*.

Calyx when young closed, completely enveloping the flower, later on splitting into 2—3 lobes.

BORNEO. East Borneo: West Kutai, Long Hut, alt. 150 m, Nov. 10, 1925, hilly country, forest, about 12 m high, 10 cm in diam., calyx green with brown spots, corolla outside grey-brown, *Endert 4766* (L, BO, type).

Considerable variation is found in the length of the lateral inflorescence axes and the length of the upper part of the pedicel, even to a higher degree than in *C. macranthus*; further in the shape of the calyx, the number of the cells in the ovary, being 7 or 8; and the hairiness of the style.

Merrill (Pl. Elm. born. 123. 1929) mentioned an inadequate specimen [British North Borneo, Elphinstone Prov., Tawao, Oct. 1922—Mar. 1923,

¹ *Hiascere*, to split open.

Elmer 21541 (K, L)] which, in absence of flowers could not satisfactorily be placed, as to be likely a *Megaphyllacea* Hemsl. However, the leaves (30—50 by 7—12 cm) are, except for their more rounded base, quite similar to those of *C. medusae*. The fruit, of which only two cross sections are available, has 9—11 cells, a diameter of 6 cm, and a very dense covering of fulvous, stiff hairs. The field notes of this specimen read (Merrill, *l.c.*): "A tree in dense forests, the trunk 30 cm in diam. Leaves 1—1.5 cm long. Infrutescences pendulous, axillary, 30—60 cm long, the fruits somewhat obovoid-globose, 9—12 cm long, stoutly rostrate, prominently rugose, densely ferruginous-hirsute, 9- or 10-celled".

2. CHISOCHETON MACRANTHUS (Merrill) Airy Shaw

Clemensia macrantha Merrill in Philipp. J. Sci. 3: 144. 1908; Bibl. Enum. Born. Pl. 321. 1921; Enum. Philipp. fl. Pl. 2: 371. 1923; Pl. Elm. born. 123. 1929; Elmer in Leaf. Philipp. Bot. 9: 3349. 1937; Harms in Engler & Prantl, Nat. PflFam., 2. Aufl., 1911: 155 f. 34. 1940; Heine in Fedde, Repert. 54: 230. 1951. — *Chisocheton macranthus* (Merr.) Airy Shaw in Hook., Ic. Pl. 4 (2): t. 3333. 1937.

Dysoxylum dehiscens Elmer in Leaf. Philip. Bot. 9: 3349. 1937 (nomen nudum).

Chisocheton medusae [non Airy Shaw] *sensu* Heine, Pfl. Samml. Clem. Mt. Kinabalu, Thesis (München) 47. 1953.

Soft-wooded tree, 4—10 m. Leaves chiefly at the end of the branches, up to 140 cm long; petiole and rhachis stout, woody, purplish black-coloured, somewhat rough and sparsely hairy to glabrous, roundish to angular. Leaflets alternate or opposite; petiolules 0—0.8 cm long, somewhat incrassate, blackish; blade ovate to oblong-lanceolate, 20—40(—56) by (8—)9—12(—16) cm, submembranous, glabrous above, sometimes sparsely puberulous below; apex acute to acuminate; base often inequilateral, subacute or rounded; margin entire, slightly recurved and ciliate; lateral nerves 14—24 on either side, straight, near the margin curved towards the apex, prominent on the underside and always more or less hairy as is the stout midrib, the upper side not prominent and mostly glabrous. Inflorescence up to 130 cm long; axis roundish to angular, somewhat rough to subglabrous; lateral axes short with up to 12 flowers; pedicels in the axils of caducous, lanceolate, 5—8 mm long bracts, lower part up to 1 cm long, 2—3 mm thick, as the lateral inflorescence axis velvety-hairy, upper part terete, grooved, 1—4 mm long, 3—5 mm thick. Calyx cylindrical to widely cup-shaped, 14—20 mm long and wide, as the pedicel very densely short-hairy; apex truncate to divided into 3—4 triangular teeth 8 mm long; base rounded and irregularly fine-plaited. Petals 7—10, 30—45(—50) by 4—7(—12) mm. Full-grown staminal tube 24—40 mm long, 6—7 mm in diam., top divided into numerous narrow, sometimes lobed teeth 4—6 mm long; outer side of the teeth, chiefly at their base, yellow-strigose-hairy, tube glabrous outside, in the lower part yellow-pilose inside. Anthers 20—30, 4—5(—6) by 1.2—1.5(—2) mm, somewhat backwardly curved, backside with some yellow, strigillose hairs.

In full-grown flowers the teeth of the staminal tube and the anthers are sometimes wanting. ♀ Flowers: ovary somewhat sunken into a flat, roundish, brown, glabrous disk, ovoid, 4—6 mm in diam., densely yellow-strigose, 5-locular. Style as long as the staminal tube or longer, lower half yellow-strigillose-hairy, towards the top shorter hairy to glabrous. Stigma globose, truncate, 2 mm in diam., glabrous. ♂ Flowers: ovary wanting. Style on a flat, short, annular disk, quite glabrous, further as in the ♀ flower. Fruit on a woody, 5—7 mm thick pedicel, globose 4—5(—6) cm long, dehiscent or not at the somewhat acuminate top, densely shortly fulvous-tomentose, 5-celled. Seed 1 per cell, triangular, 2.5—3.2 cm long, outer side dark brown, shiny, inner sides with an aril-like coat, when dry dull brown, somewhat rough and very short-hairy.

PHILIPPINES. Mindanao: Todaya, Mt. Apo, May 1909, under surface of leaf hairy, fruiting, *Elmer 10697* (L); ibidem, May 1909, under surface of leaf hairy, *Elmer 11082* (L). By Merrill (Enum. Philipp. fl. Pl. 2: 371. 1923) also recorded from Lake Lanao, Camp Keithley (type locality) and from the islands of Malamaui, Siargao, and Basilan. — BORNEO. North Borneo: *Villamil 226* (L) (fruits 5-locular, possibly *C. macranthus*); Betotan, Apr. 14, 1933, tree, 9 m by 13 cm, wood soft, calyx red, corolla orange outside and white inside, *Orolfo B.N.B.For.Dept.2313* (K); Elphinstone Province, Tawao, Oct. 1922—Mar. 1923, leaves 57 by 17 cm, fruit large, 5 cm long, 5.5 cm broad, seeds 3—3.2 cm long, *Elmer 21861* (K, L); Mt. Kinabalu, Minitindok Gorge, Nov. 1915, petals 50 mm long, staminal tube 40 mm, *Clemens 10431* (K); Dallas, 900 m alt., Aug. 18—31, 1931, leaves absent, fruit at last dehiscent, according to native information a very tall tree, *Clemens 26114* (L); Dallas, 900 m alt., Oct.—Nov. 1932, *Clemens 27217, 30220* (K, L); Penibukan, at Kinataki R., Nov. 16, 1933, tree 30 cm in diam., leaf 120 cm, flower strand 210 cm, buds cream to brown, calyx red, *Clemens 50411* (K, L); Koung, 600 m alt., Dec. 31, 1933, flowers dull yellowish, very fragrant, calyx red, *Clemens 51302* (K). — West Borneo: G. Kenepai, Dec. 20, 1893—Jan. 4, 1894, *Hallier 1938* (L).

In some characters I found a noteworthy variation. In three specimens the leaf meshes are sparsely puberulous on the underside. In some specimens the calyx is truncate or a little incised, in other specimens there are three coarse teeth. The number of anthers, described by Merrill as 20, I found to amount also to 21, 22, 25, 31. The style of the hermaphrodite flowers is in its upper half shortly puberulous up to the top in one specimen, but glabrous in an other. The fruit is probably dehiscent, but not enough material is available to settle this point.
